

The Revision of the Tribe Chalepini of
America North of Mexico. III. Genus *Odontota* Chevrolat
(Coleoptera, Chrysomelidae)¹

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Introduction

This revision of *Odontota* Chevrolat is the third in a proposed series reviewing the six genera of Chalepini of America North of Mexico. The second, a revision of the genus *Chalepus* Thunberg, 1805, was published in the Journal of the New York Entomological Society, 22(2), (Butte, 1968b).

Odontota Chevrolat, 1837, (Dejean Cat., p. 364 of the "1833" edition, p. 388 of the "1836" or "1837" edition²) was proposed for forty-one species. Out of the forty-one species only nine are now listed as valid under four different generic names in the catalogue by Weise (1911b). Four of these nine species were listed in *Xenochalepus* by Weise, but two of these four species should be transferred to *Odontota*, since for reasons given below, they are not considered to be congeneric with other species of *Xenochalepus*.

Recent papers on neotropical hispids (Weise, 1910; Spaeth, 1937) proposed changes of nomenclature affecting the generic assignment of some of our species. It is now proposed to readopt the generic name *Odontota* Chevrolat which was long used as a valid genus for some North American species but listed as a synonym of *Chalepus* in the catalogue of Gemminger and Harold (1874-1876). The name was published and is available by application of Article 12 and 16 (a) (V) of the International Code of Zoological Nomenclature. *Odontota* became available by inclusion of several available specific names, (Chevrolat, 1837:388) in combination with the new genus-group name. The species of *Odontota* are strikingly different from other species of *Xenochalepus* or *Chalepus*.

The species of this genus closely resemble *Xenochalepus* in their general appearance, by the prominence of clypeus and frontal ridge, by the presence of ten and one-half rows of punctures on elytra, and by the structure of the genitalia. However, these two genera are easily separated by the following sets of char-

¹From a dissertation submitted in partial fulfillment of the requirements for the Ph.D. degree at the Catholic University of America, Washington, D. C., 1966.

²The above cited pages are identical in several broken or defective characters and are without doubt assignable to 1837, as stated by Barber and Bridwell, 1940:2. Page 364 in the 1833 copy shows more wear than that in 1837 copy and adds support to the theory that the former (1833 edition) was completed by reissuing part 5 of the latter (1837) with changed pagination and that part 5 of the 1837 volume has priority.

acters in which those for *Odontota* are given first and those for *Xenochalepus* second: Form oblong; form cuneiform. Clypeal base subangulate; clypeal base angulate. Frontal carina usually cristulate; frontal carina usually cristate. Pronotal baso-lateral torulose absent; pronotal base-lateral torulose present; Each elytron distinctly tricolostate; each elytron distinctly bicostate. Apices of elytra regularly rounded; apices of elytra conjointly rounded. Sutural angles of elytra rectangulate; sutural angles of elytra deeply subquadrate-emarginate. Aedeago-flagellum usually short and its anterior end away from foramen; aedeago-flagellum usually long and its anterior end close to foramen.

The species of *Odontota* and *Chalepus* can be segregated by the following sets of characters in which those of *Odontota* are given first and those for *Chalepus* second: Form oblong, sides gradually but slightly dilated from base to apex; form elongate, sides parallel. Clypeal apex more arcuate, base subangulate; clypeal apex feebly arcuate, base angulate. Frontal carina strongly developed and usually cristulate; frontal carina feebly developed and usually cristate. Each elytron with eleven rows of punctures at base; each elytron with ten rows of punctures at base.

The measurements used here were described previously by Butte (1968a).

ODONTOTA Chevrolat

Odontota Chevrolat, 1837:388; Crotch, 1837:80; Chapuis, 1875:138; Horn, 1883:290, 294; Chittenden, 1902:86.

Type Species of Genus. *Odontota scapularis* (Olivier) 1808:766 by present designation. (Location of type, Museum National d' Histoire Naturelle, Paris.)

Diagnostic Features of Genus. Form oblong. Each elytron distinctly tricolostate extending from base to apex with eleven striae at base. Sutural angles of elytra rectangulate and not emarginate. Apices of elytra regularly rounded.

Description of Genus. The species of *Odontota* are wedge-shaped or oblong; length from 5.5 to 7.3 mm.; males are generally larger than the females. *Head:* slightly wider than long. Vertex trisulcate, area between ocular and median sulci finely rugo-punctate. Frontal ridge cristulate, shape varies, either elongate or diamond-shaped. Antennae vary in length, basal segment incrassate. Clypeus strongly transverse; surface microgranulose or coarsely tuberculose; raised prominently, base subangulate, lies close to antennae and slightly overhanging toward base. Mandibles robust, no longer than broad; size and shape of apices varies; outer margin of each mandible is rather broadly and evenly arcuate. *Pronotum:* transverse, generally widest medially; lateral margins angulo-subrotundate at middle, bisinuate; dorsum transversely convex, posterior depression may be present or absent; a baso-lateral torulose on either side of posterior depression absent. Apex of last tarsal segment varies in shape between the bases of claws. *Elytra:* oblong; gradually but slightly dilated from base to apex; the latter regularly rounded; apical sutural angle rectangulate; outer margin may be serrulate or absent. Each elytron with ten, at the extreme base with eleven, rows of punctures. *Abdomen:* with 5th visible sternum generally truncate; female with a small ir-

regular patch of setae on central elevation which in the male is hardly perceptible.

Male Genitalia. Aedeagus from moderately to heavily sclerotized and showing considerable curvature from below. Size of basal foramen varies in different species. Antero-dorsal wall of foramen strongly convex or slightly concave. Apical orifice varies from small to large, V-shaped or lunulate. Apical hood large, triangulate or cordate. Strut keeled and flattened dorsally. Flagellum usually short, its anterior end away from foramen. Spiculum varies in shape.

Distribution. The members of this genus as here recognized are distributed in eastern and central parts of the United States. This genus is represented in North America by seven species.

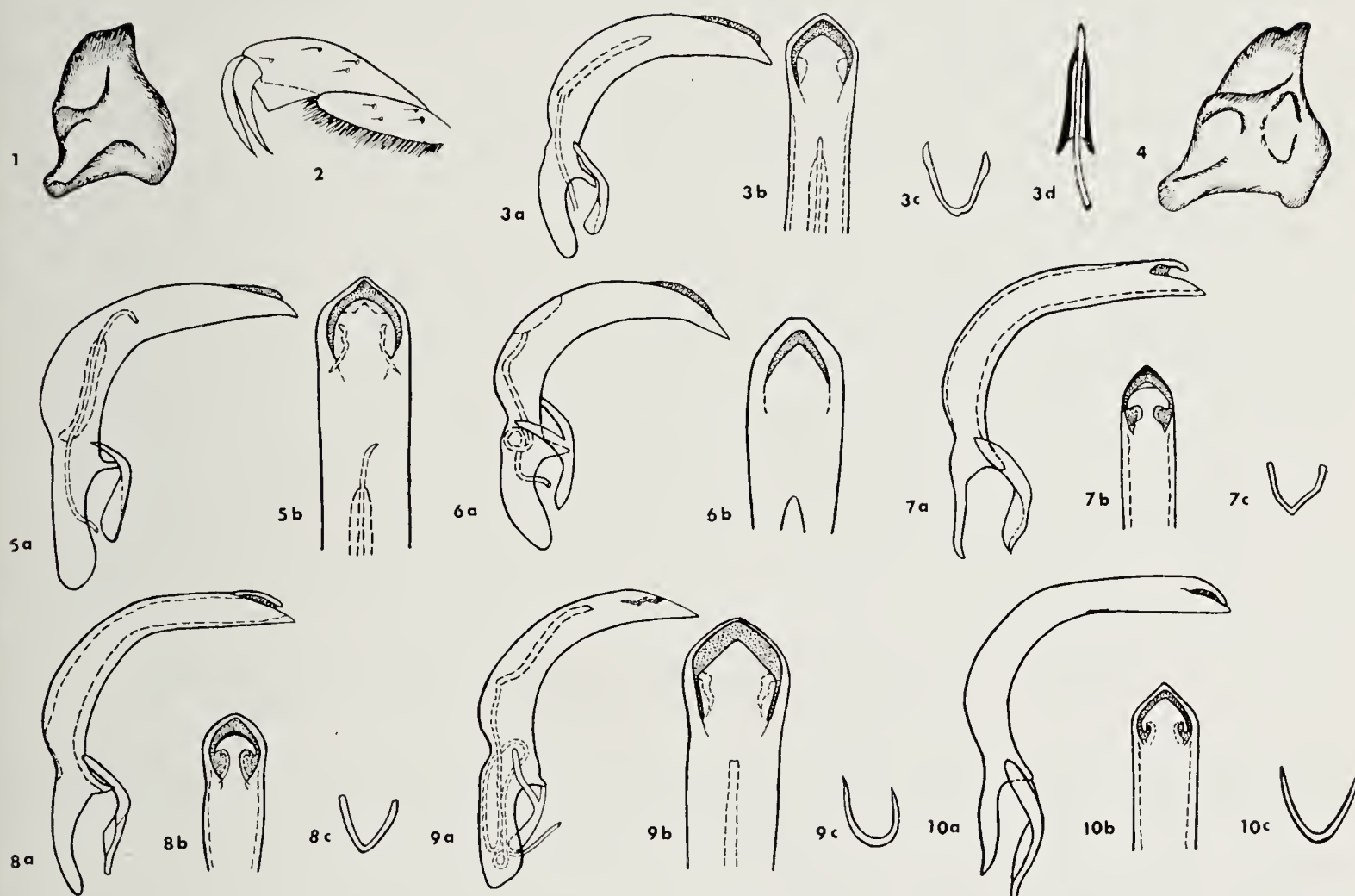


PLATE I

Plate I. Figs. 1-10.

- FIG. 1. Mandibles of *O. mundulus* (dorsal view)
 FIG. 2. Claws of *O. mundulus* (lateral view)
 FIG. 3a-3d. Male genitalia of *O. mundulus*
 FIG. 4. Mandibles of *O. scapularis* (dorsal view)
 FIG. 5a-5b. Male genitalia of *O. scapularis*
 FIG. 6a-6b. Male genitalia of *O. arizonicus*
 FIG. 7a-7c. Male genitalia of *O. notatus*
 FIG. 8a-8c. Male genitalia of *O. floridanus*
 FIG. 9a-9c. Male genitalia of *O. dorsalis*
 FIG. 10a-10c. Male genitalia of *O. horni*

Explanation of Figures

The drawings of the genitalia pertaining to the same species have been given the same number with the addition of letters, a, b, c, d, to distinguish the different views and parts: a, lateral, or slightly dorsolateral, view of aedeagus and tegment; b, dorsal, or dorsocaudal, view of aedeagus; c, dorsal, or dorsocaudal view of spiculum gastrale; d, flagellum.

Key to the Species of *Odontota* of North America

1. Lateral margins of pronotum with black vittae..... 2
- 1'. Lateral margins of pronotum without vittae..... 3
2. Prosternum and legs entirely black; elytral punctures distinctly elongate towards apex in first two striae..... *mundulus* (Sanderson)
- 2'. Prosternum orange-red; profemora orange-yellow at base; elytral punctures not elongate..... *scapularis* (Olivier)
3. Mandibles distinctly bidentate; clypeus elongate; sides of abdominal sternites 3-4 pale yellow..... *arizonicus* (Uhmann)
- 3'. Mandibles monodentate; clypeus strongly transverse; sides of abdominal sternites 3-4 black..... 4
4. Elytra entirely black..... 5
- 4'. Elytra reddish-yellow, with black sutural stripe..... 6
5. Mesosternum entirely black; elytral margin not serrulate; eye width equal to interocular distance..... *notata* (Olivier)
- 5'. Mesosternum orange-yellow; elytral margin distinctly serrulate; eye width wider than interocular distance..... *floridanus* n. sp.
6. Prosternum black; elytral margin dentate, sutural black stripe broadening gradually from base to apex; apex of last tarsal segment deeply cleft at base of claws..... *dorsalis* (Thunberg)
- 6'. Prosternum yellow; elytral margin not dentate; sutural black stripe widest near base, not reaching apex; apex of last tarsal segment feebly sulcate at the base of claws..... *horni* Smith

1. *Odontota mundulus* (Sanderson, 1951) New Combination

(Figs. 1; 2; 3, a, b, c, d; Plate II)

Xenochalepus mundulus Sanderson, 1951:162. (Location of type: in the collections of the Illinois Natural History Survey, Urbana, Illinois.)

Type Locality. Oglesby, Illinois.

Diagnostic Features. Very similar to *O. scapularis* (Oliv.), but may be readily separated by the presence of the following characters:

The absence of yellow marks on base of femora and underside of prothorax; and also elytral punctures in the inner two rows are slightly elongate toward apex instead of rounded; elytral margin not serrated. Aedeago-flagellum less than one-third the length of aedeagus; apically rectate.

Description of Species. Male. Virginia, Fairfax Co., Vienna, May 17, 1934, J. C. Bridwell collector (NSNM).

Length 5.5 mm.; width 2.5 mm.; wedge-shaped. *Head:* length/width ratio, .833. Frontal carina diamond-shaped. Antennae 1.5 mm. in length; 2nd segment cylindrical; segments 3-5 obconic; 3rd about one-third longer than 2nd and 4th. Clypeus coarsely tuberclose. Labrum prominent, crescentic, dorsally with row of fine hairs centrally. Mandibles robust, monodentate, cutting edges broad (fig. 1). Eye width less than the width of clypeus, and equal with dorsal interocular space. *Pronotum:* length 0.8 mm.; width 1.3 mm.; lateral margins parallel on basal three-fifths, then obliquely converging to the apex. Dorsum transversely convex,

depressed posteriorly with ante-scutellar transverse ridge; surface coarsely and deeply foveo-punctate; interstices subcrystate. Medial line basally distinct, apically evanescent. Legs normal; apex of last tarsal segment deeply cleft (fig. 2) between the bases of claws. *Elytra*: length 4.6 mm.; width 2.4 mm.; outer margin finely serrulate, but not so distinctly as in *O. scapularis*. Elytral punctures generally rounded, but distinctly elongate toward apex in 1st and 2nd striae near suture, with feeble apical carina between 6th and 7th rows of punctures. *Abdomen*: sparsely micro-punctate; 5th sternum apically truncate and hardly perceptible setae on either side of median elevation.

Color. Pronotum bicolored, a large median black spot widest at base and narrowing toward apex; lateral margin of pronotum broadly black at center and narrowing to anterior and posterior angles of pronotum; remaining area of pronotum uniformly orange-red. Each elytron at basal one-fifth with elongate yellow triangular area extending from base of inner costa to lateral elytral margin. 5th visible sternum laterally bright yellow. Venter and legs black.

Male Genitalia. Aedeagus heavily sclerotized and showing greater curvature from below (fig. 3a). Basal foramen slightly smaller than one-fourth the length of aedeagus; strongly convex antero-dorsally running into a prominent concave depression at one-third of the aedeagus. Lateral plates (fig. 3b) small, triangular and regular. Tegmen V-shaped with short acute ends. Strut short, and close to foramen. Flagellum stout, broad at base and narrowing toward apex (fig. 3d). Length of flagellum less than one-third the length of aedeagus. Spiculum (fig. 3c) V-shaped, somewhat asymmetrical.

Female. Fifth abdominal sternum with a small, irregular patch of setae on either side of central elevation.

Biology. "These beetles live upon and the larvae mine in the leaves of the 'hog-peanut', variously called *Falcata comosa* L., *Amphicarpa dioica* or *Amphicarpaea dioica*. About 30 specimens were collected on this host-plant at Vienna, Va. (12½ mi. west of Washington, D. C.), May 17, 1936, by the late Mr. J. C. Bridwell in contrast with a similar series of *O. scapularis* (Oliv.), collected at the same time and place but on the 'ground nut' to which host-plant *scapularis* is peculiar. Other series include samples taken or reared by Bridwell on the same host-plant in the vicinity of Washington at Glen Echo, Md., June, 1928, and June 10, 1930." (Data from H. S. Barber, unpublished.)

Larvae. Undescribed.

Variation and Discussion. The size variation is as follows: total length: males 5.4-5.6 mm., females 6.0-6.2 mm.; elytral length: males 4.2-4.5 mm., females 4.6-4.7 mm.; elytral width: males 2.1-2.3 mm., females 2.4-2.6 mm. The total length of males is less than the females and shows sexual dimorphism of total length.

The pronotum has a large median black spot, widest at base and narrowing towards apex; in some specimens this spot is basally confluent with the lateral marginal vitta.

The description given by Blatchley (1910:1226) for *O. scapularis* is partly applicable to *O. mundulus* (Sanderson).

Distribution. The general distribution of *O. mundulus* (Sanderson, 1951) is indicated on Plate II. This species is known from Massachusetts southward to Texas and westward to Nebraska and has been collected from late May to late August, mostly in June and July.

Specimens Examined. 209: MASSACHUSETTS: Suffolk Co., Brookline, 2 (CAS); 2, (MCZ). Montgomery, 1, (MCZ). No further data: 4, (MCZ). Hampden Co., W. Springfield, 2, (USNM), Norfolk Co., Wellesley, June 2, and 23, 1912, 4 males, 2 females, P. G. Bolster, (MCZ). RHODE ISLAND: Bristol Co., Bristol, 1 male, N. S. Easton, (MCZ). CONNECTICUT: Middlesex Co., Cornwall, 1, (CU). New Haven Co., New Haven, 3, (CU). Sound Beach, 1, (AMNH). NEW YORK: Nassau Co., Sea Cliff, 2, (MCZ); Little Neck, 2, (CAS). Westchester Co., White Plains, 1, (CNHM). New York City and vicinity, 1935, 5, C. Schaeffer, (USNM); 1, (AMNH). Riverdale, 2; Brownville, 9; Rahway, 1; Van C. Pk., 3, (AMNH). Murlain Lake, 1, (CNHM). Patterson, 4, (CU). No further data: 9, (AMNH); 1933, 2, Wickham, (USNM). PENNSYLVANIA: E. Park, 2, R. Hopping, (CAS). Wind Gap, Aug. 3, 1947, 3, J. W. Green, (CAS). No further data: 2, Liebeck, (MCZ); 1, (AMNH). 2, F. C. Bowditch, (MCZ). NEW JERSEY: Passaic Co., Paterson, July 25, 1, J. A. Grossbeck, (AMNH). Bergen Co., Ridge Wood, June 22, 1911, 1, M. D. Leonard, (CU). Alpine, 3; Eagle Rock, May 8, 1, (AMNH). A. Fenyés, 5, Beyer; Hillside, August 6, 1922, 1, Quirfield, (CAS). No further data: 1935, 3, C. Schaeffer, (USNM). MARYLAND: Plummers Island, July 26, 1914, 1, Q. L. McAtee; July 20, 1913, 7, W. D. Appel, (USNM). Montgomery Co., Glen Echo, summer, 1922, 18, J. C. Bridwell, (USNM). Baltimore, June, 1902, 5, Van Dyke, (CAS). Forest Glen, July 6, 1913, 1; May 30, 1914, 1, (USNM). DISTRICT OF COLUMBIA: No further data: 1, (AMNH). VIRGINIA: Fairfax Co., Vienna, May 17, 1936, 30, J. C. Bridwell, (USNM). Glen Carlyn, May 18, 1, Banks, (MCZ). Four-mile Run, May 31, 1914, 1, A. Wetmore, (USNM). Buffalo Ck., July 5, 1927, 1, Chamberlain, (CU). No further data: June 6, 1941, 1, Borys & Malkin, (CNHM). WISCONSIN: Dane Co., Madison, May 31, 1931, 1, Chas. L. Fluke, (CNHM). ILLINOIS: Carroll Co., Savanna, July 29, 1892, 1, McElfesh, (CAS). Knox Co., Galesburg, 3, Liebeck, (MCZ). Glenview, July 2, 1911, 20, Blaisdel; Riverside, June 6, 1913, 3, L. S. Slevin, (CAS). Edgebrook, 1940, 4, Moznette, (USNM). No further data: May 26, 1912, 3, Chamberlain, (CU). Northern Illinois, 4, E. A. Klages, (CU). MISSOURI: Jackson Co., Kansas City, 4, H. Soltan, (USNM). IOWA: Johnson Co., Iowa City, 4, Wickham, (USNM). NEBRASKA: Douglas Co., Omaha, Childs Point, May 22, 1909, I. F. H. Shoemaker, (CAS). KANSAS: No further data: 1933, I. Wickham, (USNM). TEXAS: No further data: 3, C. V. Riley, (USNM).

2. *Odontota scapularis* (Olivier, 1808) New Combination

(Fig. 4; 5, a, b; Plate II)

Hispa scapularis Olivier, 1808:766.

(Location of type: Museum National d' Historie Naturelle, Paris.)

Type Locality. "Carolina", U. S. A.

Hispa lateralis Say, 1823:431; LeConte, 1857:204.

(Synonymized). (Location of type: Unknown to me.)

Type Locality. "Illinois and Missouri".

Odontota scapularis (Olivier), Chevrolat, 1837:388; Crotch, 1873:80; Horn, 1883:295-296; Chittenden, 1902:86.

Chalepus scapularis (Olivier), Gemminger and Harold, 1876:3614; Blatchley, 1910:1226; 1924:43; Maulik, 1937:136; Wilcox, 1954:471-472.

Xenochalepus scapularis (Olivier), Weise, 1911 (a):28, Leng, 1920:303; Uhmann, 1938:428; Sanderson, 1951:163.

Diagnostic Features. This species bears a deceptive resemblance to *O. mundulus*, and may be confused with it in collections, but may be separated from the latter by the following characters:

Prosternum orange-red. Profemora orange-yellow at basal one-third. Elytral punctures not elongate toward apex in first two striae; its outer margin distinctly serrulate. Aedeago-flagellum is about one-third the length of terminal part and bears a long curved cylindrical process at its apex.

Description of Species. Male. Florida, Orange Co., Winterpark, March 15, 1929, J. G. Gehring collection, (MCZ).

Length 6.5 mm.; width 2.7 mm.; oblong oval. *Head:* length/width ratio, .875. Frontal carina elongate. Antennae 2.0 mm. in length; 2nd segment cylindrical; 1st and 2nd equal in length; 3rd about 1.4 times as long as 2nd and 1.7 times as 4th; 4th and 5th subequal in length; 4th cylindrical; 5th obconic; 6th about one-third shorter than 5th. Clypeus finely granulose. Labrum prominent; arcuate; broader than long. Mandibles bidentate (fig. 4), apical tooth acute. Eye width equal with the width of clypeus and interocular space. *Pronotum:* length 1.0 mm.; width 1.8 mm.; lateral margin angulo-subrotundate at middle, narrowing anteriorly and obliquely more so posteriorly. Dorsum convex, slightly depressed posteriorly with the ante-scutellar transverse ridge; surface coarsely, deeply foveopunctate, each separated by about one-half their diameters, interspaces shiny, sparsely alutaceous. Medial line well-defined with shallow longitudinal groove. Legs normal; apex of last tarsal segment deeply bifid at the base of claws. *Elytra:* length 5.1 mm.; width 2.7 mm. Outer margin distinctly but finely serrulate. Elytral punctures generally rounded. A feeble basal carina between 6th and 7th rows of punctures. *Abdomen:* impunctate; 5th sternum apically truncate, and with scarcely perceptible setae on either side of central elevation.

Color. Pronotum bicolored; a large median piceous spot, widest at one-third from ante-scutellar transverse ridge and narrowing to point behind anterior pronotal margin; lateral margins broadly black, dark area narrowing to posterior and anterior angles of pronotum; remaining area orange-red; ventrally prosternum and prosternal episternum orange-red. Elytra black; the basal one-third of its length with an elongate yellow triangular area extending from the base of innercosta to the lateral elytral margin. The profemora orange-yellow at basal third; the other femora with orange-red spot beneath at basal third. The lateral sides of 5th sternum orange-yellow.

Female. The 5th abdominal sternum with a small, irregular patch of setae on either side of central elevation.

Male Genitalia. Aedeagus moderately sclerotized and showing considerable curvature from below (fig. 5a). Basal foramen large, equal to one-fourth the length of aedeagus; feebly convex antero-dorsally and running into a depression at one-third from base. Lateral plates (fig. 5b) large and irregular. Tegmen U-shaped with short acute ends. Strut elongate, close to foramen. Flagellum stout, broad at base, gradually narrowing into a long, curved, cylindrical process at apex; its length equal to one-third the length of aedeagus.

Biology. "This species has been collected on and reared from larvae in the indigenous plant 'ground nut' known as *Glycine apias* L. or *Apios tuberosa* Moench; at Vienna, Va. and other localities near Washington, D. C. by the late Mr. Bridwell on several occasions," (H. S. Barber; unpublished). Adults reared from this host plant by Dimmock at Springfield, Mass. in 1901 and by C. R. Ely in Conn. in 1910 are also before me. Popence, 1877 from Kansas; Blatchley, 1910 from Indiana and Maulik, 1937 also reported the same host plant.

Larvae. Illustrated by Needham, Frost and Tothill (1928:183).

Variation. Size variation is as follows: total length: males 6.3-6.5 mm., females 7.2-7.8 mm.; elytral length: males 5.1-5.2 mm., females 5.9-6.2 mm.; elytral width: males 2.6-2.7 mm., females 3.2-3.5 mm. The total length of males studied is considerably less than the length of the females, and thus shows striking sexual dimorphism of total length.

In some specimens there is a small irregular orange-red spot at the center of the mesosternum, and at the base of mesocoxa and mesotrochanter. In some specimens the above mentioned coloration is totally absent. In some specimens there is a small indistinct piceo-rufous patch running at the base of frontal carina, in others it is absent. Humeral color range varies from one-third to one-half of the length of elytra. The color range at the base of meso- and metafemora varies from a well-marked orange-red spot to a hardly perceptible coloration. The description given by Blatchley (1910:1226) for *O. scapularis* is partly applicable to *O. mundulus* (Sanderson).

Distribution. The general distribution of *Odontota scapularis* Olivier, is indicated on Plate II. This species is known in the east from southern Canada to Florida and in the west from Michigan to Texas and has been collected from late March to early September, mostly in June and July.

Specimens Examined. 253: 84 males, 109 females, 60 sex undetermined. CANADA: ONTARIO, Leamington, 12-VI-1940, 2 females; 3-VIII-1940, 1 male, 1 female, W. J. Brown, (CNC). UNITED STATES: MASSACHUSETTS: Norfolk Co., Wellesley, May 30, 1908, 1 female; June 2, 1912, 1 male; June 23, 1912, 1 male; June 8, 1913, 2 males, 2 females, 1?, Percy Gardner, (MCZ). Plymouth Co., Wareham, Aug. 18, 1898, 1 male, O. Bangs, (MCZ). Marion, June 11, 1903, 1 female; June 28, 1903, 1?; July 24, 1899, 1 female; July 20, 1899, 1 female; Aug. 1, 1903, 1 female, 1? June 30, 1 female, (MCZ). Suffolk Co., Brookline, 1 male, 1 female, F. C. Bowditch, (MCZ). Worcester Co., Southboro, June 29, 1913, 1 female, C. A. Frost, (MCZ); June 4, 1933, 1 female, C. A. Frost, (CAS). Hampden Co., Springfield, June 28, 1903, 1 male, 1 female, F. Knab; July 28, 1902, 1?, G. Dimmock, (USNM). Berkshire Co., Melrose High, August

19, 1908, 1 female, D. H. Clemons, (USNM). Barnstable Co., Woods Hole, August 15, 1927, 1 male, 1?, W. T. M. Forbes, (CU). Middlesex Co., Ashland, June, 1892, 1?, E. W. Mank, (CU); Framingham, May 31, 1905, 1 male; June 2, 1934, 1 female; June 12, 1957, 1 male, 1 female, C. A. Frost, (MCZ); Concord, August 18, 1939, 1 male, 2 females, H. R. Dodge, (CNHM). Fall River, May 21, 1906, 1 male; May 31, 1909, 1 male; June 6, 1909, 1 male, 2 females, N. S. Easton, (MCZ). No further data: Readville, 1 male, 1?, (AMNH); 27, Van Dyke, (CAS). RHODE ISLAND: Bristol Co., Barrington, June 6, 1908, 1 male, N. S. Easton, (MCZ). Watch Hill, June 30, 1909, 1 female, W. Robinson, (USNM). CONNECTICUT: Fairfield Co., New Canaan, July 15 and 25, 1949, 2 males, 2 females; June 3-July 30, 1950, 8 males, 12 females, 32?, M. Statham, (AMNH). East River, July 30, 1910, 1?, Chas. R. Ely, (USNM). Lyme, June 17 and 18, 3 males, 4 females, 3?, W. S. Fisher, (USNM). NEW YORK: Brooklyn Co., Vicinity of New York, 1 male, 2 females, Chas. Pain, (AMNH). Suffolk Co., Wantagh, June 30, 1940, 1 female, 1?; July 22, 1939, 25?, Borys Malkin, (CNHM); Riverhead, June 20, 1934, 2 males, 2 females, H. Dietrich, (CU); Wyandanch, July 4, 1914, 3?, F. M. Schott, (CU); Yaphank, July 9, 1916, 1 female, (AMNH). Nassau Co., Cedarhurst, June 5, 1904, 1 male, females, L. B. Woodruff, (AMNH); Sea Cliff, May, 2 males, Bank, (MCZ). Westchester Co., Yonkers, May 30, 1940, 2 males, 3 females, Borys Malkin; Sept. 2, 1929, 1 female, Chas. L. Ragot, (CNHM). Richmond Co., Great Kills, July 6, 1940, 3?, Borys Malkin, (CNHM). Queens Co., Rosedale, July 3, 1937, 1 female; Aug. 10, 1938, 1 female, H. Gelfand; Oct. 3, 1926, 1 male, F. M. Schott, (CU). Princes Bay, June 22, 1914, 1 male, G. Kelley, (CAS). NEW JERSEY: Hudson Co., Bergenfield, May 20, 1933, 1 female, Borys Malkin, (CNHM); 1 male, F. M. Schott, (CU). Middlesex Co., Jamesburg, 1 male, (AMNH). Cape May Co., Cape May, May 30, 1949, 1 female, P. Vaurie, (AMNH); July 13, 1930, 5 males, 2 females, J. W. Green, (CAS). 5 M. Beach, 2 males, 3 females, H. A. Wenzel, (CNHM). Bergen Co., Alpine, June 10, 1937, 1 female, F. M. Schott, (AMNH). Anglesea, 6 males, 6 females, Van Dyke, (CAS); 2 males, J. W. Green, (CAS); 1 male, 4 females, Liebeck, (MCZ); 2 males, 2 females, E. L. Dickerson, (AMNH). Wenonah, 1 male, Liebeck, (MCZ). No further data: 1 female, F. A. Eddy, (MCZ). PENNSYLVANIA: Philadelphia Co., Philadelphia, 1 male, 1 female, Liebeck, (MCZ). Co. undet., Angora, 1 male, Liebeck, (MCZ). MARYLAND: Plummers Island, May 25, 1918, 1 male, Van Dyke, (CAS); May 26, 1912, 1 male, 2 females, W. L. McAtee, (USNM). DISTRICT OF COLUMBIA: Washington, July 27, 1937, 2 males, 2 females, H. S. Barber, (USNM). VIRGINIA: Falls Church, May 25, 1922, 1 female, E. A. Chapin, (USNM); 1 male, Banks, (MCZ). Fairfax Co., June 28, 1925, 1 female, J. M. Schott, (AMNH). Barcroft, May 25, 1912, 2 females, 1?, C. T. Greene, (CAS). NORTH CAROLINA: Wake Co., Raleigh, May 27, 1933, 1 male, May 23, 1941, 1 female, T. B. Mitchell, (UNC). Hyde Co., Swan Quarter, May 6 and 7, 1959, 1 male, 3 females, W. M. Kulash, (UNC). Hollyshelter, April 25, 1953, 3 males, H. and A. Howden, (UNC). Wilmington, 1 female, Packard, (MCZ). FLORIDA: Duval Co., Jacksonville, 1 male, 3 females, Mrs. A. T. Slosson, (AMNH). Orange Co., Winterpark, March 15, 1929, 1 male,

2 females, 1?, J. G. Gehring, (MCZ). Pinellas Co., Clearwater, May 7, 1943, 1 male, B. Malkin, (CNHM); Dunedin, March 21, 1925, 5 males, 1 female, 1?, (CU). ALABAMA: Green Co., 5 mi. N. E. Eutaw, July 9, 1950, 1 male, 2 females, T. Cohn, P. Boone, and M. Cazier, (AMNH). MISSISSIPPI: Lowndes Co., Columbus, June 24, 1921, 1 female, C. J. Darke, (UCB). TEXAS: Nacogdoches Co., Garrison, May 9, 1952, 2 males, 4 females, M. Cazier, W. Gertsch, and R. Schrammel, (AMNH). MISSOURI: Cole Co., Jefferson City, 2 females, H. Soltan, (USNM). INDIANA: Dune Park, June 24, 1935, 1 male, 1 female, E. Dubois, (CNHM). MICHIGAN: Wayne Co., Detroit, 3 females, 1?, Hubbard and Schwarz, (USNM).

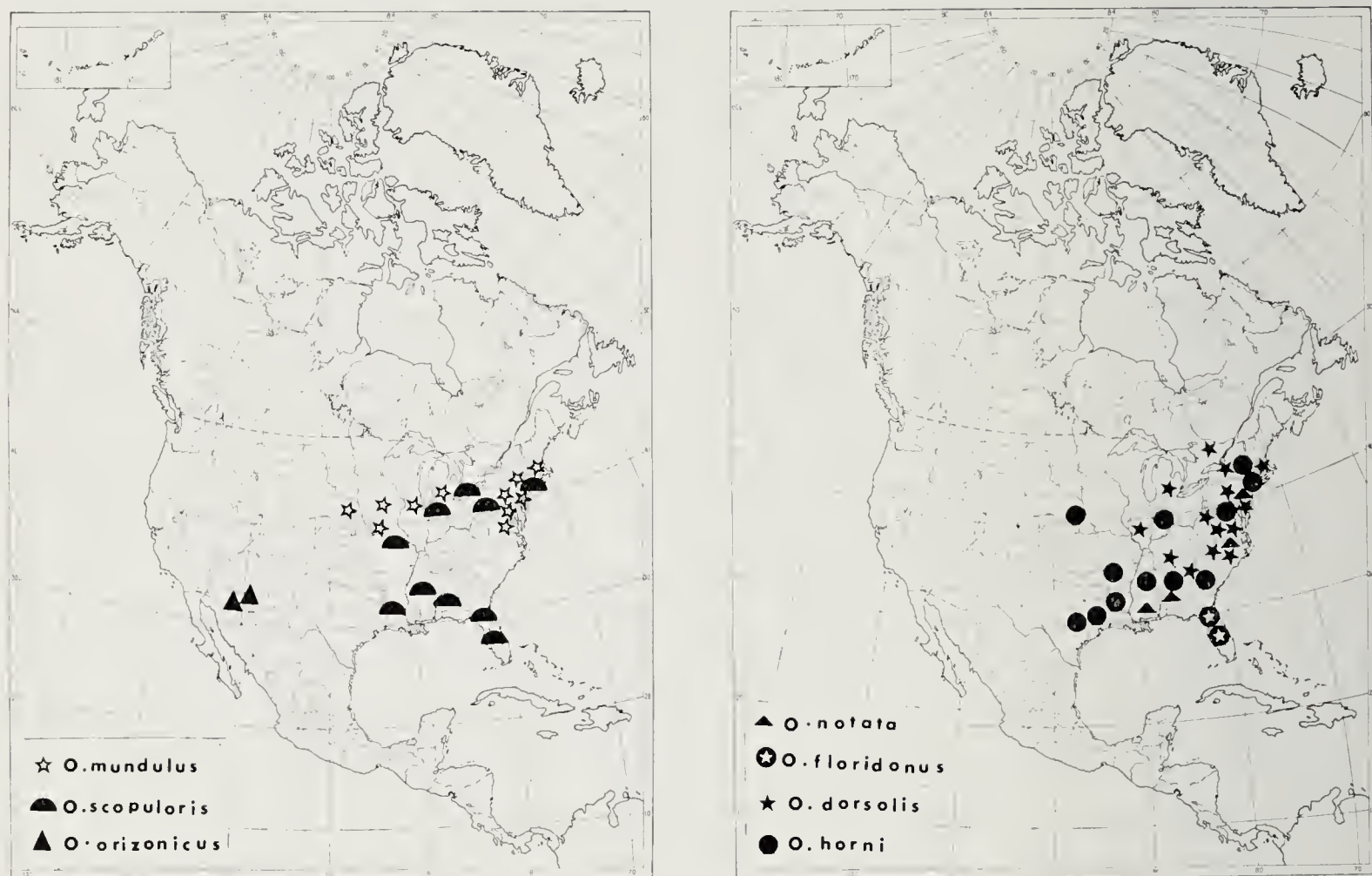


PLATE II

Plate II.

Distribution of species of *Odontota*

3. *Odontota arizonicus* (Uhmann, 1938) New Combination (Fig. 6, a, b; Plate II)

Xenochalepus (*Hemichalepus*) *arizonicus* Uhmann, 1938:425, 426; Blackwelder, 1939:64; Uhmann, 1957:94; 1964:420. (Location of type: Zoologisches Museum der Universität Berlin.)

Type Locality. Arizona, Santa Cruz Co., Nogales.

Diagnostic Features. This species resembles *O. scapularis* Olivier in habitus, but may be readily separated from the latter by the presence of the following characteristics:

Clypeus coarsely tuberculate; legs entirely black; apex of last tarsal segment between the bases of claws feebly sulcate; abdomen with a narrow, bright yellow vitta at lateral sides; aedeago-flagellum equal to one-fifth the length of aedeagus.

Description of Species. Male. Arizona, Cochise Co., Douglas, Sept. 12, 1942, Wyatt W. Jones collector, (USNM).

Length 6.0 mm.; width 2.3 mm.; oblong, less robust. *Head:* length/width ratio, .625; wedge-shaped. Frontal carina elongate. Antennae 1.8 mm. in length; basal segment subglobose, segments 2-6 obconic; segments 1st to 5th, except 3rd almost equal in length; 3rd about 1.25 times as long as its presegment. Clypeus slightly elongate, surface coarsely and irregularly tuberculate. Labrum prominent; length twice its width. Mandibles distinctly bidentate, distadentis large, acute and sharp; proxadentis small, acute and sharp; apically a small, transverse groove visible. Eye transversely wider than the clypeus or than the dorsal interocular space. *Pronotum:* length 0.8 mm.; width 1.5 mm.; widest at base; subconic; lateral sides subparallel on basal one-third then slightly but distinctly angulate just beyond the middle, thence obliquely converging to the apex; obsoletely bisinuate. Dorsum transversely convex, slightly depressed posteriorly with ante-scutellar transverse ridge; surface closely orbiculo-foveolate; interspaces shiny, sparsely alutaceous and more widely spaced on the median area. Medial line well-defined with shallow longitudinal groove. Mesotibia with a small subapical conical tooth. Apex of last tarsal segment feebly sulcate at the base of claws. *Elytra:* length 5.3 mm.; width 2.4 mm. Outer margin distinctly serrulate, more coarsely so posteriorly and on the apical border. Punctures of elytra generally rounded, but slightly elongate towards apex in 1st and 2nd striae near suture; 8th interstice feebly costiform, finely but distinctly serrulate; the surface between strial foveae microscopically tuberculate. *Abdomen:* impunctate; 5th sternum apically slightly emarginate and with hardly perceptible setae on either side of median elevation.

Color. Prothorax yellow, except for a large transverse prescutellar black spot and a infusate central area on prosternal empmeron; mesosternum, anterior one-fourth of metasternum yellow. A yellow area between hind coxae, involving lobes of the metasternum and the first visible ventral segment. Elytra black, the basal one-fourth of each with an elongate, triangular yellow area extending from the base of 1st costa to the lateral elytral margin. Abdomen with narrow bright yellow vitta at sides.

Male Genitalia. Aedeagus moderately sclerotized and showing greater curvature (fig. 6a) from below. Basal foramen slightly less than one-fourth the length of aedeagus; strongly convex antero-dorsally and running into a depression at slightly less than one-third from base. Apical orifice large (fig. 6b) and V-shaped. Lateral plates large, irregular and sub-triangular. Tegmen V-shaped, long, apex acute. Strut elongate, close to foramen. Flagellum stout, broad at anterior end and gradually tapering to acute posterior end. Length of flagellum equal to one-fifth of the length of aedeagus.

Female. The middle tibia of female with a small subapical conical tooth. Fifth visible sternum with a small irregular patch of setae on either side of control elevation.

Biology. Following are the unpublished data from the letter of Mr. Wyatt W. Jones to the late Mr. H. S. Barber. "I am sending about 150 specimens of *Chalepus*

sp. taken on soybeans, *Glycine soja* (L.) near Douglas on Sept. 12, 1942. It required only a few moments to collect the lot, many were copulating when I first noted the infestation. The damage caused by the adults, that is the feeding marks had attracted the attention of the farmer and he feared that the crop would be destroyed."

Variation. Size variation is as follows: total length: males 6.0-6.2 mm., females 6.6-6.8 mm.; elytral length: males 5.0-5.2 mm., females 5.3-5.5 mm.; elytral width: males 2.1-2.3 mm., females 2.5-2.6 mm. The total length of males studied is considerably less than the length of the females, and thus shows striking sexual dimorphism of total length. The size and shape of the notal spot varies in different specimens. Anterior metasternum yellow from one-fourth to one-half and in some Mexican specimens the flavescence extends up to metasternal lobes.

Distribution. The distribution of *Odontota arizonicus* is indicated on Plate II. This species is known from Arizona and it has been collected from middle of May to middle of September, mostly in August.

Specimens Examined. 153. ARIZONA: Cochise Co., Douglas, 12-IX-1942, 69; 10-IX-1942, 3; Aug. 26, 1942, 13, W. W. Jones, (USNM). Miller Cyn., Huachuca Mts., V-12-1962, 1, J. O. Martin, (CAS). Ft. of Miller Cr., S. Rita Mts., Aug. 16, 1940, 1, Van Dyke, (CAS). Sycamore Cn., Tumacacori Mts., June 28, 1940, 1, R. A. Flock, (CAS). Peppersauce Cn., Aug. 17, 1924, 1, (CAS). Pima Co., San Rita Mts., X-25-1936, 3, Bryant, (CAS); VI-14-1942, 42, Van Dyke, (CAS); Florida Cn., Santa Rita Mts., Aug. 10, 1924, 1, E. P. Van Duzee, (CAS); St. Xavier Mts., Tucson, Aug. 12, 1924, 1, E. P. Van Duzee, (CAS). Santa Cruz Co., 25 mi. E of Sonoita, VIII-3-1924, 1, E. P. Van Duzee, (CAS); Madera Cn., Santa Rita Mts., Sept. 18, 1936, 3, E. P. Van Duzee, (CAS); Nogales, Aug. 4, 1942, 12, mining on zinnia leaves, (USNM); Ruby, VII-27-1941, 1, E. L. Todd, (USNM).

4. *Odontota notata* (Olivier, 1808) New Combination

(Fig. 7, a, b, c; Plate II)

Hispa notata Olivier, 1808:744. (Location of type: in the collection of Bosc, Museum National d' Histoire Naturelle, Paris, France.)

Type Locality. "Carolina", U. S. A.

Odontota notata (Olivier), Crotch, 1873:80-81; Chapuis, 1877:13; Horn, 1883:295-296; Chittenden, 1902:85.

Xenochalepus notatus (Olivier), Weise, 1911 (a):27; 1911 (b):40; Leng, 1920:303; Uhmman, 1938:428, 437; 1957:104.

Chalepus notatus (Olivier), Frost, 1924:464.

Diagnostic Features. This species resembles *O. floridanus* n. sp. in color and habitus, but may be readily separated from the latter by the presence of the following characteristics:

Mesosternum black; frontal carina elongate; width of eye equal to the dorsal interocular space; outer elytral margin not serrulate. Aedeago-gastralae spiculum U-shaped; foramen wall antero-dorsally narrow in lateral aspect with a perceivable concavity.

Description of Species. Male. Mississippi, Jackson Co., Ocean Springs, July 13, 1930, H. Dietrich collector, (CU).

Length 5.5 mm.; width 2.3 mm.; oblong, robust. *Head*: length/width ratio, .777. Frontal carina elongate. Antennae 2.0 mm. in length; 2nd segment cylindrical; segments 3-6 slightly obconic; 1st and 2nd subequal in length. 3rd about 1.4 times as long as 2nd or 4th. Clypeus coarsely tuberculate. Labrum prominent, broader than long. Mandibles robust, cutting edges broad and sharp. Eye width equal to the width of clypeus and dorsal interocular space. *Pronotum*: length 1.0 mm.; width 2.0 mm. Lateral margins angulate in the middle, narrowing anteriorly and obliquely more so posteriorly. Dorsum regularly convex, with no traces of posterior depression; surface shallowly punctate; interstices subcristate, sparsely alutaceous. Medial line well-defined with shallow longitudinal groove. Legs normal, apex of last tarsal segment feebly sulcate at the base of claws. *Elytra*: length 4.4 mm.; width 2.3 mm. Outer margin not distinctly serrulate. Punctures of elytra generally rounded, but distinctly elongate toward apex in 1st and 2nd striae. There is a feeble apical carina between 6th and 7th rows of punctures. *Abdomen*: with 5th sternum truncate and hardly perceptible setae on either side of median elevation.

Color. Prothorax orange-red, except on dorsum a large, irregular black central spot and prosternal posterior margin infuscate. Meso- and metasternum entirely black. Abdominal 5th sternum laterally bright yellow. Legs and elytra entirely black.

Male Genitalia. Aedeagus heavily sclerotized and showing greater curvature from below (fig. 7a). Basal foramen small, equal to one-fifth the length of aedeagus. Foramen wall antero-dorsally narrow on lateral view with perceivable concavity, running into a depression at one-fourth from base. Apical orifice large (fig. 7b), lunulate. Apical hood large, cordate, basally narrowed. Lateral plates small and lunulate. Tegmen V-shaped. Strut elongate, not close to foramen. Flagellum was not observed. Spiculum (fig. 7c) V-shaped and somewhat asymmetrical.

Female. The fifth abdominal sternum with a large, irregular, dense, patch of setae on central elevation.

Biology. Frost, 1924, reported that *Chalepus notatus* (Olivier) occurs on *Tephrosia virginiana* from Fla., Va., and Wash., D. C.

Variation. Size variation is as follows: total length: males 6.0-6.1 mm., females 6.2-7.0 mm.; elytral length: males 4.7-4.8 mm., females 5.1-5.4 mm.; elytral width: males 2.4-2.5 mm., females 2.6-2.8 mm. The total length of males is less than females, and shows sexual dimorphism of total length.

Distribution. The general distribution of *O. notatus* (Olivier) is indicated on Plate II. This species is known from New Jersey to Mississippi and has been collected from late May to early August, mostly in July.

Specimens Examined. 27: 10 males, 13 females, 4 sex undetermined. ALABAMA: Mobile Co., Mobile, June, 2 females, (USNM); 2 males, 2?, N. S. Easton; 1?, Liebeck, (MCZ), Grank-Bay, 1 male, 3 females, H. P. Loding, (CAS). MISSISSIPPI: Jackson Co., Ocean Springs, July 13, 1930, 1 male, H. Dietrich, (CU). Wilkinson Co., Woodville, July 6, 1921, 1 male, C. J. Drake, (UCB). Richton, April 23, 1930, 1 female, H. Dietrich, (CU). No further data: Aug. 9, 1921, 1 female, C. J. Drake, (CAS). NORTH CAROLINA: Currituck Co.,

Currituck, June 22, 1948, 1?, J. Conner, (UNC). Southern Pines, May 3, 1905, 2 females, A. H. Manee, (USNM). NEW JERSEY: Atlantic Co., Da Costa, 1 male, Van Dyke, (CAS); 1933, 1 female, Wickham, (USNM); 1 female, Bowditch, (MCZ); 3 males, F. A. Eddy, (MCZ). No further data: 1 male, 2 females, (MCZ).

5. *Odontota floridanus* new species

(Fig. 8, a, b, c; Plate II)

Diagnostic Features. This species resembles *O. notatus* (Olivier) in color and habitus, but can be easily separated from the latter by the presence of the following characteristics:

Mesosternum orange-yellow; frontal carina diamond-shaped; width of eye wider than dorsal interocular distance; outer elytral margin distinctly serrulate. Aedeogastrale spiculum V-shaped.

Holotype. FLORIDA, Putnam Co., Welaka, May 1-4, 1955, (H. E. and M. A. Evans collectors); male; deposited in the collection of Cornell University, Ithaca, N. Y., Cornell Type No. 4394.

Host Plant. Unknown.

Description of Holotype. Length 5.7 mm.; width 2.4 mm.; oblong. *Head:* length/width ratio, .875. Frontal carina diamond-shaped. Antennae 2.0 mm. long; 2nd segment cylindrical; segments 3-6 subconic; 2nd 1.3 times shorter than 1st; 3rd 1.5 times longer than 4th. Clypeus coarsely tuberculate. Labrum prominent, broader than long. Mandibles slightly robust; apices obtuse; cutting edges are not broad. Eye width equal to the width of clypeus and wider than dorsal interocular space. *Pronotum:* length 1.1 mm.; width 1.8 mm. Lateral margins angulo-subrotundate at middle, narrowing towards apex and obliquely more so towards base. Dorsum regularly convex, with no traces of posterior depression; surface deeply punctate; interstices subcristate, sparsely alutaceous. Medial line well-defined with shallow longitudinal groove. Legs normal; apex of last tarsal segment feebly sulcate between the bases of claws. *Elytra:* length 4.5 mm.; width 2.4 mm. Outer margin distinctly serrulate. Punctures of elytra generally rounded, but distinctly elongate towards apex in 1st and 2nd stria. *Abdomen:* with 5th sternum truncate, feebly emarginate, and hardly perceptible setae on either side of median elevation.

Color. Prothorax orange-yellow, except on dorsum a large, regular, black central spot. Mesosternum and anterior one-fourth metasternum orange-red. Abdominal 5th sternum laterally pale yellow. Legs and elytra entirely black.

Male Genitalia. Aedeagus moderately sclerotized and showing greater curvature from below (fig. 8a). Basal foramen large, slightly smaller than one-fourth the length of aedeagus; strongly convex antero-dorsally, running into a depression at one-fourth from base. Apical orifice large (fig. 8b), lunulate. Apical hood large, cordate, basally narrowed. Lateral plates small and sublunulate. Tegman U-shaped. Strut short, slightly close to foramen. Flagellum was not observed. Spiculum (fig. 8c) V-shaped and symmetrical.

Allotype. Female; same data as holotype, except the date April 18-20, 1955, length 6.2 mm.; width 2.6 mm. Female is somewhat larger than the male. Fifth abdominal sternum with a large, irregular, dense, patch of setae on central elevation.

Paratypes. 41: 19 males, 19 females; 3 sex undetermined. Paratypes are designated from the following localities: FLORIDA: Putnam Co., Welaka, April 18-20, 1955, 1 male, H. E. & M. A. Evans, (type locality), (CU); Crescent City, April, 1908, 1 female, Van Duzee, (CAS). Osceola Co., Kissimmee, 3 males, 1 female, Chas. Palm (AMNH). Duval Co., Jacksonville, 1 female, Liebeck, (MCZ); 1 male, 2 females, 2?, Mrs. A. T. Slosson, (AMNH). Volusia Co., Ormond, 1 male, Mrs. A. T. Slosson, (AMNH); 1 female, F. C. Bowditch, (MCZ); De Leon Sprs., July 5, 1929, 1 female, John George Gehring, (MCZ). St. Johns Co., St. Augustine, Aug. 18, 1932, 1 male, L. Lacey, (AMNH). Sarasota Co., Sarasota, 1 female, John George Gehring, (MCZ). St. Petersburg, April 28, 1908, 1 male, Van Duzee, (USNM). Seminole Co., Sanford, April, 1908, 1 female, 1?, Van Duzee, (USNM). Aug. 4, 1930, 1 female, R. H. Beamer, (UKL). Polk Co., Lakeland, March 26, 1923, 1 male, E. M. Craighead, (USNM). Nassau Co., Hilliard, July 24, 1939, 1 male, D. E. Hardy, (UKL). Palm Beach Co., W. Palm Beach, June 11, 1941, 1 female, L. W. Hepner, (UKL). Hills Co., Tampa, July 20, 1924, 1 female, P. McKinstry, (UKL). Enterprise, 4 males, 2 females, Liebeck, (MCZ); 3 males, D. M. Castle, Van Dyke, (CAS). Estero, May 6-12, 1908, 1 female, Van Duzee, (USNM). Suwannee Spr., Aug. 2-3, 1939, 1 female, Wakullah, July 10, 1939, 1 male, R. H. Beamer, (UKL). No further data: 1 male, F. A. Eddy; 1 female, (MCZ). 2 females, (AMNH).

Biology. Unknown.

Larvae. Unknown.

Variation and Discussion. Size variation is as follows: total length: males 5.7-6.3 mm., females 6.2-6.7 mm.; elytral length: males 4.4-5.0 mm., females 4.8-5.2 mm.; elytral width: males 2.4-2.7 mm., females 2.6-2.8 mm. The total length of males is less than females, and thus shows sexual dimorphism of total length.

The close relationship between *O. floridanus* n. sp. and *O. notatus* (Olivier) is indicated in their similar general appearance, namely the pronotal color, structure of vertex, clypeus, last tarsal segment, elytral color and punctuation. However, the following characters of *floridanus* will facilitate for rapid separation from *notatus*:

Entire mesosternum and one-fourth metasternum orange-yellow; frontal carina diamond-shaped; apices of mandibles obtuse and not broad; width of eye wider than dorsal interocular distance; elytral margins distinctly serrulate. Aedeago-basal foramen large, antero-dorsally strongly convex; tegmen U-shaped; strut short, dorsally triangulate; gastrale spiculum V-shaped and symmetrical.

Distribution. The general distribution of *O. floridanus* n. sp. is indicated on Plate II. This species may be confined to the state of Florida, but none of the locality data is adequate enough to indicate what life zones this species occupies. Some of the above mentioned localities show marshy distribution. It has been collected from late March to middle of August, mostly in July and August.

6. *Odontota dorsalis* (Thunberg, 1805) New Combination

(Fig. 9, a, b, c; Plate II)

Chalepus dorsalis Thunberg, 1805:282; Gemminger and Harold, 1876:3613; Horn, 1883:290, 296; Hopkins, 1896:248; Chittenden, 1897:22; 1902:70-83; Blatchley, 1910:1227; Leng, 1920:303; Frost, 1924:464; Needham, Frost and Tothill, 1928:197-199; Poos, 1940:742-745; Wilcox, 1954:472. (Location of type: Museum of Uppsala University, Uppsala.)

Type Locality. Patria vacat.

Hispa scutellaris Olivier, 1808:771; Crotch, 1873:81, (Synonymized); Gemminger and Harold, 1876:3613. (Location of type: Museum National d' Histoire Naturelle, Paris, France.)

Type Locality. Santo Domingo.

Hispa suturalis Harris, 1835:147; Melsheimer, 1853:118, (Synonymized); Crotch, 1873:81; Gemminger and Harold, 1876:3613. (Location of type: The Society of Natural History, Boston, Massachusetts)

Type Locality. "Carolina", U. S. A.

Odontota harrisi Crotch, 1873:80; Horn, 1883:290, 296; Leng, 1920: 303, (Synonymized). (Location of type: in LeConte collection, Museum of Comparative Zoology, Cambridge, Massachusetts.)

Type Locality. Unknown to me.

Odontota dorsalis (Thunberg), Henshaw, 1885:114.

Xenochalepus dorsalis (Thunberg), Weise, 1911 (a):27; 1911 (b):40; Leng, 1920:303; Maulik, 1937:137; Uhmman, 1938:427, 437.

Diagnostic Features. This species resembles *O. horni* in color, size, and shape, but may be readily separated from the latter by the presence of the following characters:

Elytra with an unequal, black sutural stripe becomes gradually broader and extends to apex; outer margin distinctly serrulate; punctures of elytra generally rounded, but distinctly elongate towards apex in 1st and 2nd striae. Clypeus micro-granulose. Pronotal median line well-defined; prosternum black. Apex of last tarsal segment deeply cleft between the bases of claws.

Description of Species. Male. Massachusetts, Beach Bluff, July 19, 1915, H. M. Parshley collector, (CAS).

Length 6.2 mm.; width 2.6 mm.; wedge-shaped. *Head:* length/width ratio, .714; vertex trisulcate; area between ocular and median sulcus finely rugo-punctate. Frontal carina elongate. Antennae 2.0 mm. in length; basal segment incrassate, slightly longer than its width; 2nd cylindrical; 1st and 2nd subequal in length; 3rd slightly obconic, about 1.5 times as long as 2nd; segments 4-6 obconic and each gradually decreasing in length. Clypeus micro-granulose. Labrum longer than broad. Mandibles robust, apices acute, sharp. Eye width equal to the width of clypeus and dorsal interocular distance. *Pronotum:* length 1.0 mm.; width 1.8 mm.; widest medially; lateral margins distinctly subangulate near middle, narrowing anteriorly and obliquely more so posteriorly. Dorsum transversely convex; slightly depressed posteriorly with ante-scutellar transverse ridge. Surface coarse-

ly, deeply, foveo-punctate; punctures generally elongate; interstice shiny, sub-cristate. Medial line ill-defined. Mesotibia with small, inconspicuous, subapical tooth. Apex of last tarsal segment deeply sulcate between the bases of claws. *Elytra*: length 4.3 mm.; width 2.2 mm.; outer margin serrulate. Punctures of elytra generally rounded, but distinctly elongate towards apex in first two striae. There is a feeble, short, apical carina between 6th and 7th rows of punctures. *Abdomen*: sparsely micro-punctate; 5th sternum apically truncate and in male hardly perceptible setae on either side of median elevation.

Color. Pronotum and elytra yellow, the latter with a black sutural stripe becomes gradually much broader and extends to apex. 5th abdominal sternum bright yellow laterally. Venter and legs black.

Male Genitalia. Aedeagus moderately sclerotized and showing considerable curvature from below. Basal foramen large, equal to one-fourth the length of aedeagus. Anterior portion on lateral view (fig. 9a) broad; rectate anterodorsally and running into a depression at one-third from base. Apical orifice large and V-shaped. Apical hood large, triangulate. Lateral plates large and irregular. Tegmen V-shaped with long truncate parameres. Strut elongate bent upward into the foramen. Flagellum stout, broad, S-shaped, and one-third the length of aedeagus. Spiculum (fig. 9c) V-shaped, asymmetrical.

Female. Females are larger than males. Fifth abdominal sternum with a small, irregular patch of setae on either side of central elevation.

Biology. Relatively more is known about the biotic association of *O. dorsalis* Thunberg than any other species of genus *Odontota*. The following biological data are from published reports and notes in quotation marks are from the literature. A brief historical review on biology and economic importance of *O. dorsalis* is given below.

(1) Fitch, 1865.—first time this insect was reported severely injuring the foliage of black locust at Glen Cove, Long Island, N. Y.

(2) 1880.—an anonymous writer reported this species, under the name *Odontota scutellaris* Olivier, attacking species of oak and elm.

(3) Hopkins, 1896.—reported adults of this leaf miner feeding upon white oak, beech, birch, hawthorn, and apple.

(4) Chittenden, 1897.—reported rearing of this species from larvae found mining the leaves of soybeans.

(5) Chittenden, 1902.—has given the best account of leaf-mining and life-history of *Chalepus dorsalis* Thunb., on black locust.

(6) Houser, 1913.—reported this insect as a pest of apple in Southern Ohio.

(7) Houser, 1918.—reported the severe attack on soybeans in Southern Ohio.

(8) DeLong, 1925.—made the observation of attack on soybeans in Southern Ohio, as follows: "The feeding by this insect is much more severe than any feeding caused by the Mexican bean beetles upon the same crop."

(9) Guyton, 1926.—reported the attack on soybeans in Green Co., Pennsylvania.

(10) Dominick, 1938.—observed large numbers of a new brood of adults of this species feeding on oak.

(11) Poos, 1940.—reported as a pest of soybeans, and mentioned that the “possibility” of two biologically distinct forms might exist on the basis of discriminating food habits, namely the forms feeding on soybeans and black locust.

Chittenden, 1902 on black locust and Poos, 1940 on soybeans have given the best account of leaf-mining and life history of *O. dorsalis* Thunberg, from whom I have borrowed the facts.

“The leaf-mining locust beetle, *C. dorsalis*, is perhaps the species best known, on account of the midsummer damage it does to the leaves of the black locust (*Robinia pseudoacacia*). In case of severe attack the leaves turn brown as if scorched by fire.”

The adult beetles make their appearance in early spring as soon as the locust leaves are fully developed. The eggs are laid on the underside of locust leaves in small masses of three to five, glued together, and partially covered with excrement. The first egg of the mass is laid flat on its side and others partly overlap the first one and, therefore, stand obliquely, with one end of each egg touching the leaf surface. A brown spot soon appears on the upper leaf surface.

The larvae on hatching enter the leaf under the protection of the egg mass through a single hole that is made by the larva that hatches first, and all of them occupy one common mine. They consume all the mesophyll within the mine. From two to four days, after having eaten half or more of the first leaf they leave the mine and wander to other leaves and separately make new mines. There are several such changes of habitation, and the damage to the tree is greatly increased by this uneconomical habit. The larval life appears to last about 3 weeks.

Larvae. The larva of *O. dorsalis* is rather unspecialized for a leaf miner. It is slightly depressed and not much narrower behind the prothorax. The second and third segments of the thorax are distinctly wider than the first. Legs are well developed. The body is yellowish-white, with darker sclerotization of head, prothoracic disc, legs and dorsum of anal segment. The abdominal segments are triangularly produced at the sides each into the thin, flat, spine-tipped tooth.

Pupation occurs within the mine and the pupal stage lasts a week or ten days. The adult beetles, emerging break their way out through the thin and brittle epidermis of the leaf. There is apparently a single brood annually northward with more than one in the south.

Variation. Size variation is as follows: total length: males 5.5-6.1 mm., females 6.6-6.8 mm.; elytral length: males 4.5-5.0 mm., females 5.3-5.5 mm.; elytral width: males 2.3-2.6 mm, females 2.9-3.1 mm. The total length of the males studied is considerably less than the length of the females, and thus shows striking sexual dimorphism of total length. Prosternum black, but in some specimens yellow at base and apex. Frontal carina extends as a cristulate between the antennae and joins clypeal base, but in some specimens the carina extends further down and joins clypeal apex.

Distribution. The general distribution of *O. dorsalis* Thunberg is indicated on Plate II. This species is known in the east from southern Canada to Georgia and westward to Illinois. It has been collected from middle of April to late August, mostly in May, June, and July.

Specimens Examined. 365: CANADA: ONTARIO: Pelee Island, I-VII-1940, 1, W. J. Brown, (CNC); Ottawa, 20-VI-1949, 1, G. S. Walley, (CNC). UNITED STATES: MASSACHUSETTS: Plymouth Co., Duxbury, Aug. 17, 1897, 3, Percy, Gardner, and Bolster. Norfolk Co., Newton, 3, F. C. Bowditch, (MCZ). Hampden Co., Springfield, July 27, 1901, 4, F. Knab, (USNM). Bristol Co., Swansea, Aug. 21, 1943, 1, N. E. Easton, (MCZ). Essex Co., Nahant, July 15-30, 1900, 1, Percy, Gardner, and Bolster, (MCZ). CONNECTICUT: Fairfield Co., New Canaan, June 18, 1956, 1; July 15, 1949, 1; Aug. 14, 1949, 1, M. Statham, (AMNH). RHODE ISLAND: Watch Hill, Aug. 1, 1909, 5, W. Robinson, (USNM). NEW YORK: Kings Co., Rockaway Bch., Aug. 3, 1916, 2, F. A. Sherriff, (CAS). Cherry Valley, July 26, 1948, 22, J. C. Pallister, (AMNH). Suffolk Co., Farmingdale, June 14, 1914, 29, N. D. Morrow, (CU). Tompkins Co., Ithaca, July 13, 1947, 2 (CU). No further data: 6, J. B. Smith, (USNM). PENNSYLVANIA: Allegheny Co., July 2, 1894, 3, (CU); Pittsburgh, June 26, 19, E. A. Dodge, (CAS). Lancaster Co., Lancaster, May 10, 7, (AMNH). Pike Co., Milford, June 9, 1949, 1, M. A. Cazier, (AMNH). Bucks Co., New Hope, May 14, 1949, 1, J. C. Pallister, (AMNH). Monroe Co., Pocono Lake, Aug. 1, 2, Van Dyke, (CAS). Fayette Co., Uniontown, June 21, 3, Van Dyke, (CAS). Hummelstown, July, 1918, 8, Blaisdell, (CAS); Linglestown, July 4, 4, Van Dyke, (CAS); W. Park, 3, Van Dyke, (CAS). Philadelphia Co., Philadelphia, 1, Van Dyke, (CAS); 29, (CU). NEW JERSEY: Ocean Co., Lakewood, May 18, 15, G. D. Bradford, (AMNH); Lebanon State Pk., May 13, 1949, 1, M. Cazier, (AMNH). Mercer Co., Trenton, May 17, 3, H. B. Weise, (AMNH). Burlington Co., Browns Mills, May 14, 1949, 1, M. A. Cazier, (AMNH). Bergen Co., Palisades Park, May 17, 1959, 14, (AMNH). Atlantic Co., Egg Harbor, June 15, 1, W. S. Abbott, (USNM). Monmouth Co., Freehold, July 19, 1926, 11, L. S. Slevin collection, (CAS). Warren Co., Phillipsburg, June 14, 1914, J. W. Green, (CAS). Bergen Co., Alpine, July 20, 1917, 1, (AMNH). Hornerstown, May 14, 1910, 9; Lahaway, May 30, 1916, 3, Chris. E. Olsen, 3; Nutley, July 4, 1, (AMNH). No further data: 7, O. Dietz, (CAS). MARYLAND: Anne Arundel Co., Odenton, June 16, 1918, 4, H. Dietrich, (CU). Washington Co., Hagerstown, July 28, 1913, 11, W. S. Abbott, (USNM). Glen Echo, Summer, 1922, 1, J. C. Bridwell, (USNM); Woltville, May 3, 1913, 6, W. S. Abbott, (USNM). Baltimore, June 13, 1909, 8, F. E. Blaisdell, (CAS). DISTRICT OF COLUMBIA: Washington, July 22, 1941, 6, L. G. Baumhoger, (USNM); 6, Banks, (MCZ). VIRGINIA: Norfolk Co., May 11, 1928, 1, G. E. Gould, (UKL). Fauquier Co., Warrenton, June 5, 1928, 5, L. C. Woodruff, (UKL). Nelson Co., July 1, 1913, 12, W. Robinson, (CAS). Fairfax Co., Vienna, May 20, 1912, 1, W. S. Abbott, (USNM). Cape Charles, May 4, 1924, 10, F. R. Mason, (CAS). Buffalo Ck., July 5, 1927, 5, (CU). NORTH CAROLINA: Haywood Co., Waynesville, April 30, 1952, 1, W. A. Stephen, (UNC). Alleghany Co., Sparta, Aug. 15, 1945, 6, (UNC). Wake Co., Raleigh, July 9, 1929, 2, T. B. Mitchell, (UNC). SOUTH CAROLINA: No further data: 4, Liebeck, (MCZ). GEORGIA: Fulton Co., Atlanta, April 14, 1905, 1, (CU). WEST VIRGINIA: Harrison Co., Fairmont, July 22, 1927, 10, L. S. Slevin collection, (CAS). KENTUCKY: No further data: 4, (MCZ). TEN-

NESSEE: Smoky Mts., Greenbrier, June 15, 1939, 12, O. Park, (CNHM). Burnt Mt., July 9, 1941, 1, A. C. Frederick, (CU); Clingman's Do. Gt., Smoky Mts. N. Park, June 12, 1947, 1, M. A. Dietrich, (CU). MICHIGAN: Washtenaw Co., Saginaw Forest, May 23, 1950, 1, E. B. Hayden, (UKL). ILLINOIS: Mason Co., Havana, Aug. 14, 1907, 1, (USNM).

7. *Odontota horni* Smith, 1885

(Fig. 10, a, b, c; Plate II)

Odontota horni Smith, 1885:94; Chittenden, 1902:85. (Location of types: United States National Museum, Washington, D. C.; and one specimen in Julich's Collection in American Museum of Natural History, New York.)

Type Locality. Massachusetts, U. S. A.

Chalepus smithi Donckier, 1899:592; Weise, 1911 (c):174, (Synonymized).

Type Locality. Unknown to me.

Chalepus horni (Smith), Blatchley, 1910:1226-1227; Frost, 1924:464; Wilcox, 1954:472.

Xenochalepus horni (Smith), Weise, 1911 (a):27; 1911 (b):40; Leng, 1920:303; Uhmman, 1931:220; 1938:428; 1957:103; 1964:422.

Diagnostic Features. This species bears a deceptive resemblance to *O. dorsalis* but it may be separated from the latter by the following characters:

Elytra with a narrow, equal, blackish sutural vitta, reaching three-fourths to apex; outer margin not serrulate; punctures uniform. Clypeus coarsely tuberculate. Pronotal median line well-defined; prosternum yellow. Apex of last tarsal segment feebly sulcate between the bases of claws.

Description of Species. Male. Virginia, Glencarlyn, May 30, 1906. F. Knab collector, (USNM).

Length 6.5 mm.; width 2.7 mm.; oblong. *Head:* length/width ratio, .75; vertex trisulcate; sulci close to eyes narrow, short, and deep; the median one broad and shallow. Frontal carina diamond-shaped. Antennae 2.1 mm. in length; 1st segment rotulate at base; segments 2-6 slightly obconic; 2nd slightly smaller than 1st; 3rd about 1.5 times as long as 4th. Clypeus coarsely and irregularly tuberculate. Labrum broader than long; apex arcuato-emarginate. Mandibles robust, apical tooth obtuse. Eye transversely wider than clypeus and narrower than dorsal interocular space. *Pronotum:* length 1.0 mm.; width 2.1 mm.; lateral margins distinctly subangulate near middle, obliquely narrowing anteriorly and more so posteriorly; dorsum regularly convex with absence of posterior depression; surface coarsely, densely foveo-punctate; interstice suberistate, alutaceous. Medial line well-defined with a distinct impressed longitudinal groove. Meso-tibiae of both males and females with a small, subapical, triangular tooth. Apex of last tarsal segment feebly sulcate between the bases of claws. *Elytra:* length 4.5 mm.; width 2.5 mm.; outer margin not serrulate. Punctures generally rounded and uniform. Surface of costae microscopically punctate. *Abdomen:* sparsely micro-punctate; 5th sternum apically truncate and with hardly perceptible setae on either side of median elevation.

Color. Prothorax and elytra scarlet red, the latter with a blackish sutural line, narrowing and reaching three-fourths to apex. Abdominal 5th sternum bright yellow laterally.

Male Genitalia. Aedeagus heavily sclerotized and showing considerable curvature from below (fig. 10a). Basal foramen small, equal to one-fifth the length of aedeagus; concave antero-dorsally, post-dorsally convex, running into depression at one-fifth from base. Apical orifice small (fig. 10b), U-shaped. Lateral plates small and lunular. Tegman U-shaped; parameres long, apex obtuse. Strut long, close to foramen, dorsally keeled but not triangulate. Flagellum was not observed. Spiculum U-shaped (fig. 10c), symmetrical.

Female. The 5th abdominal sternum with a small, irregular patch of setae on central elevation.

Biology. "The late Mr. J. C. Bridwell has reared some specimens from the mining leaves of "beggar louse," *Meibomia rigida* Elliott, on July 20, 1940. The record by Blatchley, 1910:1227, of its occurrence on the "hog peanut," *Falcata comosa* L. is probably erroneous, as is also the common belief that the species is rare. Mr. Bridwell's experience with *horni* on its wild hostplants shows this species to be locally abundant."—Unpublished data from H. S. Barber.

Frost, 1924:464, has reported that *Chalepus horni* Smith, occurs on *Cracca virginiana* L. from New Jersey.

Larvae. Unknown.

Variation. Size variation is as follows: total length: males 5.5-6.4 mm., females 6.5-7.0 mm.; elytral length: males 4.3-4.8 mm., females 5.0-5.6 mm.; elytral width: males 2.2-2.7 mm., females 2.7-3.0 mm. The total length of the males studied is considerably less than the length of the females, and thus shows striking sexual dimorphism of total length.

Mesotibia of males and females with a small subapical, triangular tooth, in some specimens the subapical tooth is absent. Pronotum entirely scarlet red, but in some specimens there is a small black spot or small vitta on median line. Pronotum densely foveo-punctate, interstices cristate; but in some specimens the surface is not densely foveo-punctate and the interstices are subcristate.

Distribution. The general distribution of *O. horni* Smith is indicated on Plate II. This species is known from Massachusetts southward to Texas and westward to Nebraska. It has been collected from middle of April to early October, mostly in June and July.

Specimens Examined. 80: 32 males; 48 females. MASSACHUSETTS: Forest Hills, 1 male, 1 female, F. A. Eddy, (MCZ). NEW JERSEY: Atlantic Co., Da Costa, July 26, 2 males, 1 female, F. C. Bowditch, (MCZ); 1 male, 1 female, F. A. Eddy, (MCZ); June 24, 2 females, Liebeck, (MCZ); July 19, 2 males, (UKL); July 4, 1 female, Chas. Palm, (AMNH); 1933, 1 female, Wickham; July 19, 1 male, Hubbard and Schwarz; 1 female, F. K. Knab, (USNM); 1 male, Van Dyke; 1 male, R. Hopping, (CAS). DISTRICT OF COLUMBIA: Washington, May 20, 1 female, Chittenden, (USNM). VIRGINIA: Glencarlyn, June 18, 1913, 1 male, E. Shoemaker, (CAS); May 30, 1 female, Banks, (MCZ); May 30, 1906, 2 males, 1 female, F. Knab, (USNM). Falls Church, May 9,

2 males, Banks, (MCZ). Fairfax Co., Vienna, July 7, 1940, 1 male, July, 1942, 2 males, 8 females, J. C. Bridwell, (USNM). NORTH CAROLINA: No further data: 1 male, Chittenden, (USNM). SOUTH CAROLINA: No further data: 1 female, (MCZ). GEORGIA: Richmond Co., Ft. Gordon, April 20, 1958, 1 female, R. R. Snelling, (UCB). ALABAMA: Randolph Co., Wadley, 1 female, H. H. Smith, (USNM). MISSISSIPPI: Tishomingo Co., Belmont, July 6, 1921, 1 female, C. J. Drake, (UCB). Dennis, July 6, 1921, 1 male, C. J. Drake, (CAS). LOUISIANA: St. Tammany Co., Covington, June 12, 1951, 1 male, Beamer, (UKL). Sabine Co., Many, June 16, 1948, 2 females, B. T. McDermott, (UKL). Longville, June 17, 1948, 2 females, H. W. Crowder, (UKL). July 16, 1907, 1 male, 2 females, F. H. Shoemaker, (USNM); June 13, 1908, 1 male, 1 female, (USNM); 2 males, 3 females, (CAS); 1 female, (CNHM); 1 male, 2 females, (AMNH); May 13, 1909, 9 males, 7 females, (CAS); Oct. 10, 1932, 1 male, (CAS). ARKANSAS: Sevier Co., DeQueen, June 16, 1948, 1 female, L. D. Beamer, (UKL); 1 male, B. T. McDermott, (UKL). TEXAS: Harris Co., 2 females, R. Oeriel, (USNM). Fayette Co., Flatonia, July 30, 1 female, J. W. Green, (CAS). No further data: 3 females, F. A. Eddy, (MCZ). KANSAS: No further data: 1 female, (USNM). NEBRASKA: Otee Co., Nebraska City, 1 female, Wickham, (CAS). ILLINOIS: No further data: 1 male, 1 female, H. Soltan, (USNM). OKLAHOMA: Atoka, June 13, 1915, 1 female, Wickham, (USNM); INDIANA: Hessville, Sept. 9, 1913, 1 female, A. B. Wolcott, (USNM). IOWA: Council Bluffs, June 10, 1906, 4 females, F. H. Shoemaker, (CAS).

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Book Review

Curculionidae Subfamily Apioninae of North and Central America with Reviews of The World Genera of Apioninae and World Subgenera of Apion Herbst (Coleoptera). By David A. Kissinger, 1968, Taxonomic Publications, So. Lancaster, Mass., 559 pages, \$20.00, cloth.

In this volume Kissinger presents a definitive study of the weevil subfamily Apioninae. 221 pages are devoted to illustrations, graphs, and maps, there being more than 2700 individual illustrations. In addition to the principal material on the North and Central America members of the genus *Apion*, the world genera of Apioninae (30) are reviewed with a key to them. Also four new genera are described.

To anyone who has studied it or has tried to identify its members, the genus *Apion* at once seems to be a difficult and large one composed of similar forms. Kissinger's detailed work should make identification of specimens much easier because for each of the 317 North and Central American species he describes and illustrates significant external characteristics along with the